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COMPLETE SPECIFICATION.

Improvements in Exhaust Silencers.

I, THOMAS CECIL GREEN, of 3A Sandycroft Road, Newcastle-upon-Tyne 2, a Subject of the Queen of Great Britain and Northern Ireland, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to exhaust silencers and particularly to those fitted to motor road vehicles, and has for its object to provide an improved construction whereby to facilitate the renewal of a silencer and its entry and tail pipe, when necessary.

Exhaust silencers as hitherto customarily constructed comprise an elongated circular, oval or rectangular chamber provided with a single entry pipe and a single tail or exit pipe both of less diameter than the silencer chamber.

An exhaust silencer according to my invention is provided at one end or both ends with a stepped spigot having a plurality of stubs of different diameters both externally and internally, no two diameters being the same, to enable the silencer to be fitted to the entry pipes and with tail pipes of different diameters as may be required. The stubs may be formed by swaging, by the fabrication of suitable tubes, or by a similar operation so that the thickness of the metal forming each stub is constant throughout.

I will more fully describe my invention with reference to the accompanying drawing which illustrates, by way of example, one construction of exhaust silencer in accordance therewith. In the drawing:—

Figs. 1 and 2 are an external elevation and a longitudinal section respectively; and

Figs. 3 and 4 are elevations looking on opposite ends of Fig. 1.

Referring to the drawing, in the example therein illustrated, the silencer *a* is of circular

section and of suitable length and diameter, and is fitted with end members *a*¹. Stepped spigots *b*, *c* are attached to said end members by welding, screwing or bolting. The spigot *b* is formed by swaging to provide three stubs *b*¹, *b*², *b*³ of different graduated diameters, and the spigot *c* is similarly formed to provide three stubs *c*¹, *c*², *c*³ of different graduated diameters, this arrangement allowing entry and tail pipes to be fitted either over or into the stubs. If desired, the spigots may be formed by a fabrication of three tubes or by a welded pressing or stamping. Where the intermediate stub *b*² or *c*² or the largest stub *b*³ or *c*³ is used, the unwanted smallest stub *b*¹ or *c*¹ or both the smallest and intermediate stubs *b*¹, *b*², or *c*¹, *c*² are removed by means of a hacksaw or otherwise suitably.

Each of the stepped spigots *b* and *c* thus provides three bore sizes and three outside sizes, that is to say six graduated sizes to each spigot. As an example, the outside diameters of the stubs *b*¹, *b*² and *b*³ may be respectively 1.111, 1.236 and 1.611 inches while the internal diameters may be respectively 1.015, 1.140 and 1.515 inches. Similarly, the outside diameters of the stubs *c*¹, *c*² and *c*³ may be respectively 1.361, 1.486 and 1.861 inches while their internal diameters may be respectively 1.265, 1.390 and 1.765 inches. It will therefore be appreciated that, as no two of the diameters given are alike, the two stepped spigots of the silencer are adapted to fit entry and tail pipes within a combination of thirty-six different sizes.

While I have illustrated, by way of example, a silencer having a stepped spigot at each end provided with three graduated stubs, which is the preferred arrangement, it will be understood that, if desired, the spigots may have two graduated stubs or four or more graduated stubs at each end, or a stepped spigot may be pro-

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vided at one end only of the silencer, or stepped spigots of the same size may be provided at both ends.

It will now be seen that, by my invention, the large stock of differently-sized silencers of the customary single spigot type, which it has hitherto been necessary to keep in a repair depot to meet the requirements of different makes and types of vehicles, can be replaced by a very much smaller stock of silencers having stepped spigots.

It has been proposed to provide an exhaust silencer for internal combustion engines, characterised by having an exhaust gas expansion unit consisting of an inlet pipe which divides or branches to form a plurality of expansion pipes or tubes each of which is provided on its exterior surface with a cooling fin or flange, the said unit being adapted to have attached to it a muffling chamber provided with gas inlets and an outlet or outlets, or a tail pipe, wherein

either the inlet end or the outlet end, or both, of the expansion unit is of a plurality of different exterior diameters. I make no claim to this arrangement.

What I claim is:—

1. An exhaust silencer provided at one end or both ends with a stepped spigot having a plurality of stubs of different diameters both externally and internally, no two of said diameters being the same.

2. The exhaust silencer illustrated in the accompanying drawing and herein described with reference thereto.

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PROVISIONAL SPECIFICATION.

Improvements in Exhaust Silencers.

I, THOMAS CECIL GREEN, of 3A Sandford Road, Newcastle-upon-Tyne 2, a Subject of the Queen of Great Britain and Northern Ireland, do hereby declare this invention to be described in the following statement:—

This invention relates to exhaust silencers particularly those for road vehicles, and has for its object to provide an improved construction whereby to facilitate the renewal of a silencer and its entry or tail pipe, when necessary.

An exhaust silencer in accordance with my invention is provided at one or both ends with stepped spigots having stubs of different diameters and bores to enable it to be fitted to entry pipes and with tail pipes of different diameters as may be required.

For example, a silencer of circular section and of suitable length and diameter may have at each end a stepped spigot provided with three stubs of graduated external and internal diameters such that entry and tail pipes can be fitted either over or into the stubs. Where the intermediate stubs or the largest stub is used, the unwanted smallest stub or both the smallest and intermediate stubs are removed by means of a hacksaw or otherwise suitably. Each stepped spigot

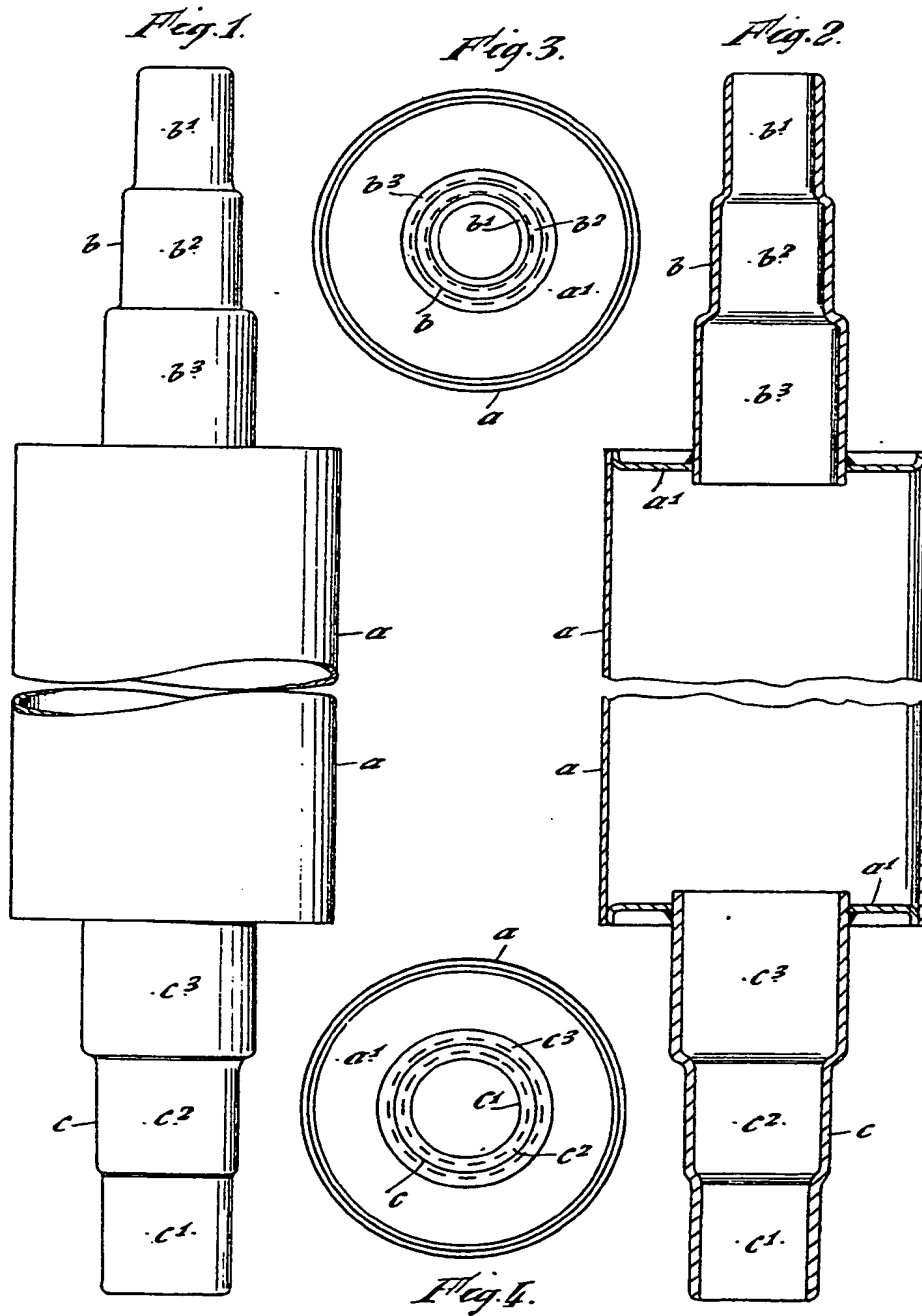
thus provides three bore sizes and three outside sizes, that is six graduated sizes to each spigot. The two stepped spigots of the silencer are therefore adapted to fit entry and tail pipes within a combination of thirty-six different sizes.

While a silencer having a stepped spigot at each end provided with three stubs is the preferred arrangement, it will be understood that, if desired, the spigots may have two or four stubs at each end, or a stepped spigot may be provided at one end only of the silencer.

It will now be seen that, by my invention, the large stock of differently sized silencers of the customary single spigot type which it has hitherto been necessary to keep to meet the requirements of different makes and types of vehicles can be replaced by one silencer having stepped spigots.

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